

**PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Docket Number

Q76963

Mail Stop AF  
Commissioner for Patents  
P.O. Box 1450 Alexandria, VA 22313-1450

Application Number

10/644,953

Filed

August 21, 2003

First Named Inventor

Takayuki ARAKI

Art Unit

1713

Examiner

Henry S. Hu

WASHINGTON OFFICE

**23373**

CUSTOMER NUMBER

Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a notice of appeal

The review is requested for the reasons(s) stated on the attached sheet(s).

Note: No more than five (5) pages may be provided.

☒ I am an attorney or agent of record.

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October 20, 2006

Date



## PATENT APPLICATION

### IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of

Docket No: Q76963

Takayuki ARAKI, et al.

Appln. No.: 10/644,953

Group Art Unit: 1713

Confirmation No.: 6799

Examiner: Henry S. Hu

Filed: August 21, 2003

For: FLUORINE-CONTAINING ETHYLENIC MONOMER HAVING HYDROXYL GROUP  
OR FLUOROALKYL CARBONYL GROUP AND FLUORINE-CONTAINING  
POLYMER PREPARED BY POLYMERIZATION OF SAME

#### PRE-APPEAL BRIEF REQUEST FOR REVIEW

#### MAIL STOP AF - PATENTS

Commissioner for Patents

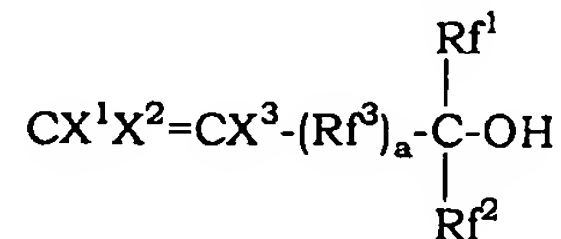
P.O. Box 1450

Alexandria, VA 22313-1450

Sir:

Pursuant to the new Pre-Appeal Brief Conference Pilot Program, and further to the Examiner's Final Office Action dated June 20, 2006, Appellants file this Pre-Appeal Brief Request for Review, accompanied by the filing of a Notice of Appeal and a Petition and payment for an Extension of Time. Claims 1, 2, 5, 7, 9 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 3,444,148 to Adelman or JP 5-238988 to Inomata et al. (JP '988) each individually in view of U.S. Patent No. 5,986,150 to Araki et al. for reasons of record.

The present invention is directed to a fluorine-containing ethylenic monomer having hydroxyl group represented by formula (1a):



wherein  $\text{X}^1$  and  $\text{X}^2$  are the same or different and each is H or F;  $\text{X}^3$  is H, F, Cl or  $\text{CF}_3$  (at least one of  $\text{X}^1$ ,  $\text{X}^2$  and  $\text{X}^3$  is H and  $\text{X}^1$ ,  $\text{X}^2$  and  $\text{X}^3$  are not H at the same time);  $\text{Rf}^1$  and  $\text{Rf}^2$  are the same or different and each is a perfluoroalkyl group;  $\text{Rf}^3$  is a fluorine-containing alkylene group

or a fluorine-containing alkylene group having ether bond; and a is 0 or 1. The elected Species is Species (2), where  $a = 1$ ,  $X^1=X^2=H$ ; and  $X^3=F$ .

**A. Difference in Structure:**

As acknowledged by the Examiner, the perfluorinated tertiary alcohol-containing monomers of Adelman and JP '988 differ from the claimed fluorine-containing ethylenic monomer having hydroxyl in that the carbon atom at the 3-position (relative to the double bond) is unsubstituted, whereas, in the elected species where  $a=1$ ,  $Rf^3$  is a fluorine-containing alkylene group having 1 to 40 carbon atoms or a fluorine-containing alkylene group having ether bond.

**B. No Interchangeability:**

The Examiner cited Araki et al as teaching bivalent groups with either perfluorinated alkylene or perfluorinated oxyalkylene relative to the 3-position corresponding to bivalent  $Rf^3$  of present claim 1. The monomer of formula (I) at column 6, line 19 of Araki et al has a fluorinated 3-position, but is missing a tertiary fluoroalcohol group. The compound at column 7, line 40 has a tertiary fluoroalcohol group, but is missing fluorinated  $Rf^3$  at the 3-position. The Examiner further maintained that Araki et al teaches that  $CH_2=CH-Y-$  and  $CH_2=CF-Y-$  type moieties are functionally equivalent, where the linking group Y can be fluorinated or non-fluorinated, citing various passages at columns 6, 13 and 15.

Appellants respectfully dispute the Examiner conclusion of interchangeability. Namely, the "Y" group referred to by the Examiner, at the 3-position, is always fluorinated C as shown in claim 1 of Araki et al.

On the other hand, the hemi-acetal compound of JP-A-143888/1975 at column 7, lines 36-49 (where the carbon at the 3-position is not substituted) is not a compound of Araki et al. This is because the fluorine-containing olefin of Araki et al. (claim 1) has  $X^2$  being a primary alcohol group or an epoxide-containing moiety. Consequently, there is no disclosure linking  $CH_2=CF-Y-$  with the compound of JP-A-143888/1975.

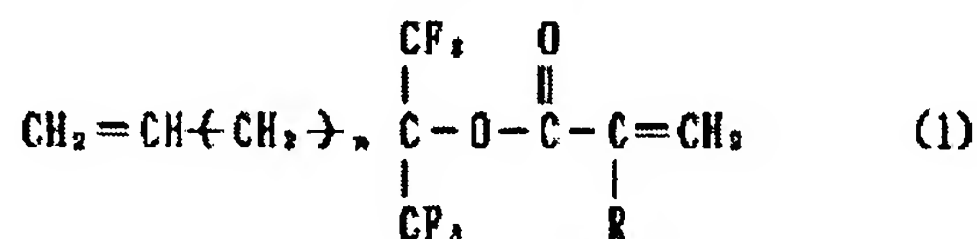
**(i) No Motivation to Combine Adelman and Araki et al.:**

The polyfluorinated tertiary alcohol monomer having  $CH_2=CH-CH_2-$  unit according to Adelman is copolymerized to prepare a copolymer having enhanced compatibility with

acrylonitrile and dyeability by the presence of fluoroalcohol, but not by the presence of a CH=CF- unit. Without first consulting the disclosure in the present specification, Appellants cannot understand how one skilled in the art could substitute the CH<sub>2</sub>=CF-Y- of Araki et al. (related to providing molded articles) for CH<sub>2</sub>=CH-CH<sub>2</sub>- in Adel '988.

(ii) **No Motivation to Combine JP '988 and Araki et al.:**

The objective of JP '988 is to provide a novel fluorine-containing organic compound represented by formula (1) reproduced below and having, in one molecule, acryloxy or methacryloxy, vinyl and trifluoromethyl.



The object of JP '988 is to provide a compound useful for improving water repellency and also as an intermediate for carbon functional silanes by introducing trifluoromethyl. However, without first consulting the disclosure in the present specification, Appellants cannot understand how one skilled in the art could substitute the CH<sub>2</sub>=CF-Y- of Araki et al. (related to providing molded articles) for CH<sub>2</sub>=CH-(CH<sub>2</sub>)<sub>n</sub>- in the monomer of JP Consequently, there is no disclosure linking CH<sub>2</sub>=CF-Y- with the compound of JP-A-143888/1975.

Thus, Araki et al. does not teach that CH<sub>2</sub>=CH-Y- and CH<sub>2</sub>=CF-Y- type moieties are functionally equivalent or interchangeable, and therefore also does not teach or suggest substitution of CH<sub>2</sub>=CF-Rf- in the corresponding portions of the compounds of Adelman or JP '988.

C. **Unexpected Results as a Basis for Patentability:**

Experimental Example 3 at pages 87-89 of the specification evaluates solubility in a developing solution. Particularly, 10 % butyl acetate solutions of the fluorine-containing polymers obtained in Example 2 and Preparation Examples 2 to 4 were prepared and coated on a Si substrate to a thickness of 200 nm followed by drying. Solubility was evaluated after dipping the dried Si substrate in a tetramethyl ammonium hydroxide aqueous solution, the results of which are set forth in Table 1 at page 89 of the specification.

The first compound in Table 1 is a compound of the invention, which is the combination of the  $\text{CH}_2=\text{CF}-(\text{Rf}_3)_a$ - moiety with a tertiary fluoroalcohol. So is the third compound in Table 1. The compounds of the invention exhibited excellent solubility and the subject films were dissolved with no remaining film, evaluated as "O". On the other hand, the second compound  $\text{CH}_2=\text{CFCF}_2\text{OCF}(\text{CF}_3)\text{CF}_2\text{OCF}(\text{CF}_3)\text{CH}_2\text{OH}$  in Table 1 is a compound representative of Araki ( $\text{CH}_2=\text{CF}-\text{Rf}_3^a$ - moiety, but no tertiary fluoroalcohol group), and the fifth compound  $\text{CH}_2=\text{CHCH}_2\text{C}(\text{CF}_3)_2\text{OH}$  in Table 1 is a compound representative of Adelman (tertiary fluoroalcohol, but no  $\text{CH}_2=\text{CF}-\text{Rf}_3^a$ - moiety).

As shown in Table 1, the polymer of the second compound (Araki et al.) was not dissolved in the developing solution (evaluated as "X"), and a polymer of the fifth compound (Adelman) left a residue (evaluated as " $\Delta$ ") when treated with the developing solution. The above-noted results (reproduced below) are unexpectedly superior over the prior art relied upon by the Examiner (combination of  $\text{CH}_2=\text{CF}-\text{Rf}_3^a$ - moiety and tertiary fluoroalcohol group).

TABLE 1

Fluorine-containing ethylenic monomer having OH	Model structure	Monomer	$\Delta H$ Exp. Ex. 1	Measured pKa Exp. Ex. 2	Solubility of polymer in a developing solution Exp. Ex. 3
$\text{CH}_2=\text{CFCF}_2\text{OCFCF}_2\text{OCFCOH}$ $\text{CF}_3 \quad \text{CF}_3 \quad \text{C}_2\text{F}_5$	$\text{HCF}_2\text{OCFCOH}$ $\text{CF}_3 \quad \text{C}_2\text{F}_5$	Ex. 1	-15.8	6.8	○ (Ex. 2)
$\text{CH}_2\text{CFCF}_2\text{OCFCF}_2\text{OCFCH}_2\text{OH}$ $\text{CF}_3 \quad \text{CF}_3$	$\text{HCF}_2\text{OCFCH}_2\text{OH}$ $\text{CF}_3$	-	122.3	12.6	× (not dissolved) (Prep. Ex. 2)
$\text{CH}_2=\text{CFC}(\text{CF}_3)_2\text{OH}$	-	Ex. 4	38.7	8.0	○ (Ex. 5)
$\text{CF}_2=\text{CFC}(\text{CF}_3)_2\text{OH}$	-	Prep. Ex. 1	10.5	7.1	-
$\text{CH}_2=\text{CHCH}_2\text{C}(\text{CF}_3)_2\text{OH}$	-	-	76.2	9.6	$\Delta$ (a residue found)

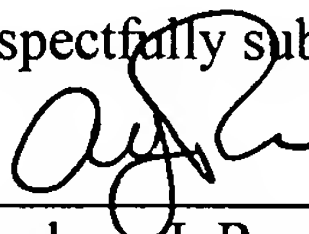
As discussed above, Appellants believe that Araki et al. does not teach interchangeability of  $\text{CH}_2=\text{CH}-\text{Y}-$  and  $\text{CH}_2=\text{CF}-\text{Y}-$  moieties, such that there is no motivation to combine

CH<sub>2</sub>=CF-Rf- taught by Araki et al. with the fluorinated tertiary alcohol of either of the primary references. However, to the extent that the Examiner considers the references as establishing a *prima facie* case of obviousness, Appellants point to the above-noted results as set forth in Table 1 of their specification as demonstrating the unexpected superiority of their invention.

In response to the Examiner's comment, there is no requirement to recite "unexpected results" relied upon as a basis for patentability. Also, the test data presented in Table 1 of the specification clearly shows criticality in the combination of the CH<sub>2</sub>=CF(Rf<sup>3</sup>)a- moiety with a tertiary fluoroalcohol.

Accordingly, it is respectfully submitted that the claims on appeal are patentable over the cited prior art, and Appellants respectfully request withdrawal of the foregoing rejection.

Respectfully submitted,



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